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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,255	06/26/2002	Chien-Hsien Ho	ACMP0017USA	8438

27765 7590 09/03/2003

NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)  
P.O. BOX 506  
MERRIFIELD, VA 22116

EXAMINER
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LIANG, LEONARD S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/064,255	Applicant(s) HO, CHIEN-HSIEN	
	Examiner Leonard S Liang	Art Unit 2853	✍

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 19 June 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                 | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____   |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION*****Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

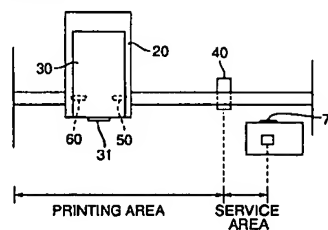
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 5-7, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al (US Pat 5953024).

Lee et al discloses:

- {claim 1} A printer (figure 2);

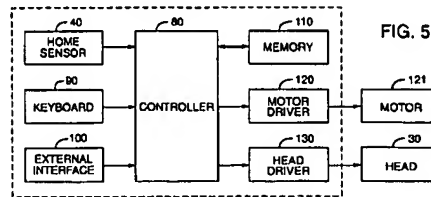
FIG. 2



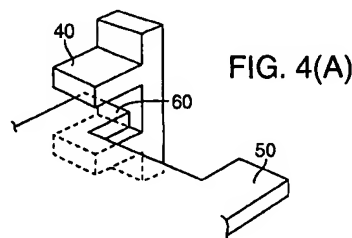
a housing (inherent); a rack installed within the housing (figure 2); a carriage moveably installed on the rack (figure 2, reference 20); a print head installed on the carriage for ejecting ink onto a medium (figure 2, reference 30); a position detecting mechanism comprising a first portion installed at a calibration position neighboring the track, and a second portion installed on the carriage (figure 2, reference 40, 50); control circuitry for controlling operations of the printer and recording the calibration position at the track, the control circuitry comprising a

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counter for recording a counted position of the second portion of the position detecting mechanism (figure 5, reference 80);



wherein the calibration position is within a range which the print head is capable of printing the medium, and the second portion is capable of printing the medium, and the second portion is capable of passing by the first portion when the print head simultaneously ejects ink onto the medium (figure 2, 4A; reference 40, 50; abstract)



- {claim 5} the first portion comprises a light source and a light sensor installed on the housing, the second portion comprising a shield installed on the carriage for shielding light transmitted from the light source to the light sensor (figure 2, 4A; reference 40, 50)
- {claim 6} the light source and the light sensor correspond to the calibration position of the track; and when a first edge of the shield moves to a position which the shield starts to shield the light transmitted from the light source to the light sensor, the control circuitry will compare the position of the first edge of the

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shield corresponding to the rack counted by the counter with the calibration position recorded by the control circuitry to obtain a difference of the two positions (figure 2, 4A, 7, reference 50, 60; abstract; column 6, lines 37-52)

- {claim 7} the light source and the light sensor correspond to the calibration position of the rack, and when a second edge of the shield moves to a position which the light sensor starts to receive the light transmitted from the light source again, the control circuitry will compare the position of the second edge of the shield corresponding to the rack counted by the counter with the calibration position recorded by the control circuitry to obtain a difference of the two positions ( figure 2, 4A, 7, reference 5, 60; abstract; column 6, lines 37-52)
- {claim 13} A printer (figure 2); a housing (inherent); a rack installed within the housing (figure 2); a carriage moveably installed on the track (figure 2, reference 20); a print head installed on the carriage for ejecting ink onto a medium (figure 2, reference 30); a position detecting mechanism comprising a first portion installed at a calibration position neighboring the track, and a second position installed on the carriage, the calibration position being within a range the print head is capable of printing the medium, the second portion being capable of passing by the first portion when the print head simultaneously ejects ink onto the medium (figure 2, 4A, reference 40, 50; abstract); control circuitry for controlling operations of the printer and recording the calibration position, the control circuitry having a counter for recording a counted position of the second portion of the position detecting mechanism (figure 5, reference 80); wherein when a

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difference between the counted position of the second portion and the calibration position recorded in the control circuitry is larger than a predetermined threshold, the control circuitry calibrates the position of the carriage (figure 2, 4A, 7, reference 50, 60; abstract; column 6, lines 37-52)

- {claim 15} the first portion comprises a light source and a light sensor installed on the housing, the second portion comprising a shield installed on the carriage for shielding light transmitted from the light source to the light sensor (figure 2, 4A, reference 40, 50, 60; column 1, lines 35-41)

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-3, 11, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Pat 5953024) in view of Hiramatsu et al (US Pat 5168291).

Lee et al discloses:

- {claims 2, 11, and 14} a printer (as applied to claims 1 and 13)
- {claim 3} a first edge of the shield corresponds to a first calibration position, and when the light source and the light sensor on the carriage move to the first calibration position which the shield starts to shield the light transmitted from the light source to the light sensor, the control circuitry will compare the position of

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the light source and the light sensor corresponding to the track counted by the counter with the first calibration position recorded by the control circuitry to obtain a first difference of the two positions; wherein a second edge of the shield corresponds to a second calibration position; and when the light source and the light sensor on the carriage move to the second calibration position which the light sensor starts to receive the light transmitted from the light source again, the control circuitry will compare the position of the light source and the light sensor corresponding to the track counted by the counter with the second calibration position recorded by the control circuitry to obtain a second difference of the two positions (figure 2, 4A, 7, reference 50, 60; abstract; column 6, lines 37-52)

- {claim 11} a step motor for driving the carriage (figure 5, reference 121)

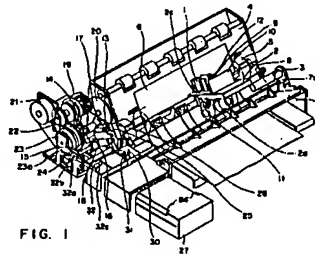
Lee et al differs from the claimed invention in that it does not disclose:

- {claim 2} the second portion comprises a light source and a light sensor installed on the carriage, the first portion comprising a shield installed on the housing for shielding light transmitted from the light source to the light sensor
- {claim 11} the counter counts rotational steps of the step motor to record the position of the second portion corresponding to the track
- {claim 14} the second portion comprises a light source and a light sensor installed on the carriage, the first portion comprising a shield installed on the housing for shielding light transmitted from the light source to the light sensor

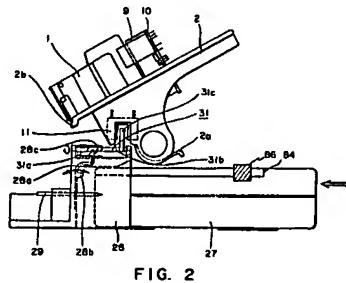
Hiramatsu et al discloses:

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- {claim 2} the second portion comprises a light source and a light sensor installed on the carriage, the first portion comprising a shield installed on the housing for shielding light transmitted from the light source to the light sensor (figure 1, reference 11; figure 2, reference 11, 31c; figure 3-4; column 5, lines 63-68)



- {claim 11} the counter counts rotational steps of the step motor to record the position of the second portion corresponding to the track (column 8, lines 1-6)



- {claim 14} the second portion comprises a light source and a light sensor installed on the carriage, the first portion comprising a shield installed on the housing for shielding light transmitted from the light source to the light sensor (figure 1, reference 11; figure 2, reference 11, 31c; figure 3-4; column 5, lines 63-68)



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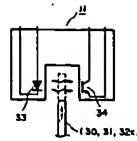


FIG. 3

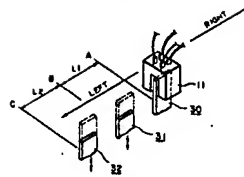


FIG. 4

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Hiramatsu et al into the invention of Lee et al. The motivation for the skilled artisan in doing so is to gain the benefit of being able to detect carriage positions using a sensor disposed on the carriage and able to move with the carriage so that the position of the second portion corresponding to the track is recorded. The combination naturally suggests putting the light sensor of Lee et al on the carriage and the light shield of Lee et al on the track.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Pat 5953024) in view of Watanabe (US Pat 6264303).

Lee et al discloses a printer (as applied to claim 1); a DC motor for driving the carriage (figure 5, reference 121).

Lee et al differs from the claimed invention in that it does not disclose an optical ruler installed on the housing; a light source installed on the carriage for emitting light toward the optical ruler; and a light sensor for detecting the light emitted by the light source through the optical ruler and generating corresponding position signals; wherein the counter uses the position

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signals generated by the light sensor to record the position of the second portion corresponding to the track.

Watanabe discloses an optical ruler installed on the housing; a light source installed on the carriage for emitting light toward the optical ruler; and a light sensor for detecting the light emitted by the light source through the optical ruler and generating corresponding position signals; wherein the counter uses the position signals generated by the light sensor to record the position of the second portion corresponding to the track (figure 1-2, reference 2; abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Watanabe into the invention of Lee et al. The motivation for the skilled artisan in doing so is to gain the benefit is to gain the benefit of optically detecting the position of a carriage via a linear scale.

***Allowable Subject Matter***

4. Claims 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 8 states, "The printer... wherein when printing the medium, if a difference between the position of the second portion corresponding to the track recorded by the counter and the position of the calibration position at the track recorded by the control circuitry is within a first predetermined range, the control circuitry does not need to calibrate the position of the carriage," which was not found, taught, or suggested in the prior arts.

Claims 9-10 depend from objected claim 8.

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***Response to Arguments***

5. Applicant's arguments with respect to claim 1-3 and 5-15 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bailey et al (US Pat 5842800) discloses a multi function sensing device for printing apparatus.

Choo (US Pat 6412899) discloses a method and a device for detecting an ink cartridge.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

lsl *LSL*  
August 22, 2003

  
**Stephen D. Meier**  
**Primary Examiner**